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— as to applicant's entitlement to apply for and be granted  
a patent (Rule 4.17(ii)) for the following designations AE,  
AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA,  
CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES,  
FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
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DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT,  
RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,  
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

— as to the applicant's entitlement to claim the priority of the  
earlier application (Rule 4.17(iii)) for the following design-  
ations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY,  
BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC,  
EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS,  
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MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG,  
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,  
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ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ,  
UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD,  
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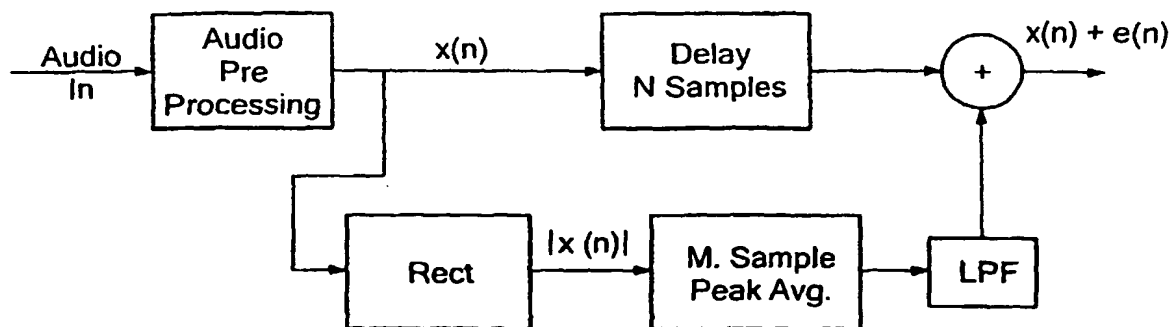
— of inventorship (Rule 4.17(iv)) for US only

Published:

— with international search report

[Continued on next page]

(54) Title: PARAMETRIC ARRAY MODULATION AND PROCESSING METHOD



(57) Abstract: A system using the nonlinearity of a propagation medium to demodulate an ultrasonic wave having audio modulated onto the ultrasonic frequency, audio signal processing circuitry providing a delayed audio signal and an envelope signal which is a function of peaks of the audio signal over a predetermined interval. The delayed audio signal and the envelope signals are combined with the delay in the audio allowing the envelope signal to accurately be aligned with the audio signal in the combination.



(88) Date of publication of the international search report:  
10 June 2004

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference HOLOS-004BQ9	<b>FOR FURTHER ACTION</b>	see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
International application No. PCT/US03/26998	International filing date ( <i>day/month/year</i> ) 26 August 2003 (26.08.2003)	(Earliest) Priority Date ( <i>day/month/year</i> ) 26 August 2002 (26.08.2002)
Applicant POMPEI, FRANK J.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 3 sheets.



It is also accompanied by a copy of each prior art document cited in this report.

## 1. Basis of the Report

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.



the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:



contained in the international application in written form.



filed together with the international application in computer readable form.



furnished subsequently to this Authority in written form.



furnished subsequently to this Authority in computer readable form.



the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.



the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (See Box II).

4. With regard to the title,



the text is approved as submitted by the applicant.



the text has been established by this Authority to read as follows:

5. With regard to the abstract,



the text is approved as submitted by the applicant.



the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No. 2



as suggested by the applicant.



because the applicant failed to suggest a figure.



because this figure better characterizes the invention.



None of the figures

Form PCT/ISA/210 (first sheet) (July 1998)

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## Box III TEXT OF THE ABSTRACT (Continuation of Item 5 of the first sheet)

A system using the nonlinearity of a propagation medium to demodulate an ultrasonic wave having audio modulated onto the ultrasonic frequency, audio signal processing circuitry providing a delayed audio signal and an envelope signal which is a function of peaks of the audio signal over a predetermined interval. The delayed audio signal and the envelope signals are combined with the delay in the audio allowing the envelope signal to accurately be aligned with the audio signal in the combination.

# INTERNATIONAL SEARCH REPORT

International Application No.

PCT/US03/26998

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : H04B 3/00

US CL : 381/111

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 381/111, 77

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,220,246 A (IDE et al) 15 June 1993 (15.06.1993), figure 7	1-6, 12, 15-17, 20, 21, 23, 24
Y,P	US 6,445,804 B1 (HIRAYANAGI) 03 September 2002 (03.09.2002), abstract, figure 1	1-6, 12, 15-17, 20, 21, 23, 24
Y	US 6,151,398 A (NORRIS) 21 November 2000 (21.11.2000), abstract, figure 7	1-6, 12, 15-17, 20, 21, 23, 24

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

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"P" document published prior to the international filing date but later than the priority date claimed

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"X"

document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y"

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

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document member of the same patent family

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27 January 2004 (27.01.2004)

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